

VII. PIERCE COUNTY

The Pierce County portion of the study was divided into three transit corridors in order to facilitate the park-and-ride demand forecasting process. The I-5 Central Corridor was further broken down into three sub-areas. Permanent park-and-ride lots were grouped into logical corridors reflecting major network, geographic, and service features.

The resulting study corridors are:

- Peninsula Corridor
- I-5 Central Corridor
 - Central Tacoma Sub-Area
 - Lakewood/Dupont Sub-Area
 - Parkland/Spanaway Sub-Area
- Valley Corridor

The Pierce County study area and its major transportation facilities are presented in Figure 7.1. The five individual corridors/sub-areas are presented along with their corresponding permanent park-and-ride lots in Figures 7.2 through 7.6.



Parkland Transit Center

DEMAND ESTIMATES AND FORECASTS

As indicated, the focus of the demand estimation approach was to provide corridor-level demand estimates for the major transit corridors in each county. Lot-specific forecasts developed as part of the described three-part methodology were aggregated to the corridor level; these estimates should not be viewed as site-specific implementation recommendations or forecasts. They are based on optimistic assumptions regarding lot placement, size, and transit service in order to develop a corridor-level “unconstrained” demand estimate. Detailed analyses based on committed transit services, known service area characteristics, competing services, and planned facility locations should be considered as part of site selection and design criteria for actual implementation.

Existing Estimates

Based upon the previously-described methodology, inputs, and assumptions, existing year 2000 estimates were developed for the identified coverage-area lots for each transit corridor. A current need for 3400 additional stalls was identified for the county overall, with approximately 850 identified for the Central Tacoma Sub-Area, 1100 for the Lakewood/Dupont Sub-Area, 350 for the Parkland/Spanaway Sub-Area, and 1100 for the Valley Corridor. The Peninsula corridor was the only corridor currently showing sufficient coverage.

INSERT FIGURE 7.1 – PIERCE COUNTY STUDY AREA

INSERT FIGURE 7.2 – STUDY AREA FOR THE PENNISULA CORRIDOR

INSERT FIGURE 7.3 – STUDY AREA FOR THE CENTRAL TACOMA SUB-AREA

INSERT FIGURE 7.4 - STUDY AREA FOR THE LAKEWOOD/DUPONT SUB-AREA

INSERT FIGURE 7.5 - STUDY AREA FOR THE PARKLAND/SPANAWAY SUB-AREA

INSERT FIGURE 7.6 – STUDY AREA FOR THE VALLEY CORRIDOR

These estimates represent ideal demand conditions, unconstrained by lot placement, facility access, or transit service. All of these conditions strongly influence park-and-ride facility use¹. These existing year “unconstrained” estimates were the first step of the methodology developed for future demand forecasting. The results of this analysis are presented by corridor and lot in Table 7.1

License plate surveys were performed by Pierce Transit on two of their facilities in 2000. The resulting origins of patrons were plotted in a map format and provided to Pierce Transit in a separate deliverable. These data were not used as a direct part of the analysis, but can nevertheless provide useful information regarding existing patron origins.

Future Forecasts

Year 2010 and 2020 forecasts were developed for the identified coverage-area lots for each transit corridor. These forecasts were based upon the base year demand estimates, and then grown at both the rate of population growth and the rate of ridership growth to provide a range of possible future demand.

2010

A future need for 900 stalls in addition to the estimated year 2000 need was identified for the county overall, with approximately 50 identified for the Peninsula corridor, 400 for the Central Tacoma Sub-Area, 200 for the Lakewood/Dupont Sub-Area, 60 for the Parkland/Spanaway Sub-Area, and 200 for the Valley Corridor, for the year 2010. Demand analysis results are presented by corridor and lot in Table 7.1.

2020

A future need for 1100 stalls in addition to the estimated year 2010 need was identified for the county overall, with approximately 400 identified for the Central Tacoma Sub-Area, 200 for the Lakewood/Dupont Sub-Area, 200 for the Parkland/Spanaway Sub-Area, and 250 for the Valley Corridor, for the year 2020. The Peninsula corridor was the only corridor showing sufficient coverage in the year 2020. Demand analysis results are also presented by corridor and lot in Table 7.1.

¹ Ibid.

Table 7.1

Parking Demand for Pierce County					
Park & Ride Facility	Lot Capacity	Year 2000 Demand		Future Demand	
		Observed	Estimated	2010	2020
Peninsula P&R Lots (SR 302, SR 16)					
Key Center	20	2	10	10	10
Purdy	220	116	200	220	220
Gig Harbor	201	168	210	230	230
TOTAL	441	286	420	460	460
I-5 Central P&R Lots (I-5, SR 512, SR 16, Pac Hwy)					
Central Tacoma:					
Narrows/TCC/Center	365	196	550	610	610 to 750
Southeast Tacoma	Proxy	N/A	630	740	740 to 820
72nd Street	68	3	630	740	740 to 820
South Tacoma Station	170	99			
Tacoma Dome Station	1193	1262	860	960	960 to 1060
Sub-Total	1796	1560	2670	3050	3050 to 3450
Lakewood/Dupont:					
SR 512	493	513	970	1080	1080 to 1210
Lakewood West	Proxy	N/A	500	590	590 to 660
Dupont	Proxy	N/A	130	140	140
Sub-Total	493	513	1600	1810	1810 to 2010
Parkland/Spanaway:					
Roy "Y"	100	25	250	280	280 to 390
Parkland	62	47	250	280	280 to 390
Sub-Total	162	72	500	560	560 to 780
I-5 CENTRAL TOTAL	2451	2145	4770	5420	5420 to 6240
Valley P&R Lots (SR 410, SR 162, SR 167, SR 7)					
N167/Sumner Station	Proxy	N/A	300	340	340 to 440
Puyallup Station	Proxy	N/A	320	370	370 to 470
South Hill	48	14	360	460	460 to 520
Bonney Lake	30	5	190	210	210
TOTAL	78	19	1170	1380	1380 to 1640
COUNTY TOTAL	2970	2450	6360	7260	7260 to 8340

Notes:

These are corridor-level estimates and forecasts and do not represent site-specific implementation recommendations.

Assumed annual growth rate for I-5 Pierce County: 1.013 - 1.045

Source: Parsons Brinckerhoff

RECOMMENDED PROGRAMMING & COST ESTIMATES

The Lakewood/Dupont Corridor and Valley Corridor show high levels of short-term demand, with demand leveling off over the long-term. The existing six-year program only partially satisfies demand in these corridors. Peninsula Corridor and Central Tacoma Corridor needs are met by the existing six-year program, with no longer term needs within the MTP 2030 Horizon.

Calculated need for new park-and-ride stalls in Pierce County is presented in Table 7.2.

Table 7.2

Identified Pierce County Park-and-Ride Capacity Needs					
	Programming Period				Total (2000-2030)
	Short- Term (Existing 2000 Need)	Mid- Range (2000 Need Unmet by 6-Yr. Program)	Long- Range (Additional 2010 Need)	MTP Horizon (Additional 2020 Need)	
Transit Corridor					
Peninsula	-50	150	50	0	0
Central Tacoma	950	-500	-200	0	750
Lakewood/Dupont & Parkland/Spanaway	1,900	1,150	300	250	2,450
Valley	1,350	150	250	150	1,750
TOTALS	4,150	950	400	400	4,950

Notes:

Numbers rounded to the nearest 50.

Short-term stall numbers represent estimated year 2000 need.

Mid-Range stall numbers represent the estimated year 2000 need minus existing 6-year programming.

Long-Range and MTP Horizon stall numbers represent forecasted needs in addition to the previous planning period, i.e., in addition to Mid-Range and Long-Range, respectively.

The Total column represents total forecasted need between 2000-2030. It therefore excludes numbers in the Mid-Range column.

Negative numbers represent current programming in excess of forecasted need for that planning period.

Source: Parsons Brinckerhoff

Pierce Transit staff suggested significant adjustments in the programming of capital projects based on previous modeling efforts and staff knowledge of growth trends in Pierce County. The adjusted program responds to Pierce Transit's concern that this modeling effort may have under- represented demand in some corridors. The finalized recommended project programming is presented along with cost estimates in Table 7.3 and Figure 7.7.

Table 7.3

Pierce County Proposed Project Program

Map #	Stalls	Corridor	Location	Facility Type	ROW Cost Area	Estimated Construction Cost	Estimated ROW Cost	Estimated Total Cost
Short-Term 2000-2006								
P1	1,200	I-5 Central	Tacoma Dome Station, Phase II	Structure	Urban	N/A	N/A	\$23,721,500
P2	350	Valley	Bonney Lake	Surface	Rural	N/A	N/A	\$2,573,000
P3	200	Peninsula	Kimball Drive, Gig Harbor	Surface	Urban	N/A	N/A	\$2,490,000
P4	250	Lakewood/Dupont	Dupont	Surface	Rural	N/A	N/A	\$6,562,000
P5	500	Lakewood/Dupont	Lakewood Station	Surface	Urban	N/A	N/A	\$6,111,000
P6	350	Valley	South Hill	Surface	Urban	N/A	N/A	\$6,075,000
P7	200	Valley	Sumner Station	Surface	Urban	N/A	N/A	\$7,472,000
P8	300	Valley	Puyallup Station	Surface	Urban	N/A	N/A	\$12,166,000
P9	450	Peninsula	SR 16 (Gig Harbor)	Surface	Urban	\$4,500,000	\$9,675,000	\$14,175,000
P9A	250	I-5 Central	South Tacoma Station	Surface	Urban	N/A	N/A	\$10,869,000
Total	4,050			Short-Term Sub-Totals		\$4,500,000	\$9,675,000	\$92,214,500
Mid-Range 2007-2015								
P10*	750	Lakewood/Dupont	SR 512/Lakewood	Structure	Urban	\$15,000,000	\$8,062,500	\$23,062,500
P11*	300	Spanaway/Parkland	SR 512/SR 7	Surface	Urban	\$3,000,000	\$6,450,000	\$9,450,000
P12	500	Valley	SR 167/Puyallup	Surface	Urban	\$5,000,000	\$10,750,000	\$15,750,000
P13	500	Valley	SR 167/Sumner	Surface	Urban	\$5,000,000	\$10,750,000	\$15,750,000
P14	750	Peninsula	SR 16 (Gig Harbor/Purdy)	Structure	Urban	\$15,000,000	\$8,062,500	\$23,062,500
P15	1,000	I-5 Central	I-5/Fife	Structure	Urban	\$20,000,000	\$10,750,000	\$30,750,000
Total	3,800					\$63,000,000	\$54,825,000	\$117,825,000
*assumes Lakewood demand partially met by I-5 reserve capacity								
ITS - Freeway Only								\$465,000
ITS - With Arterial Messaging								\$1,014,000
CCTV								\$257,000
ITS Sub-Total								\$1,271,000
Mid-Range Sub-Totals with Preferred ITS Components						\$63,000,000	\$54,825,000	\$119,096,000

Table 7.3 (cont.)

Pierce County Proposed Project Program

Map #	Stalls	Corridor	Location	Facility Type	ROW Cost Area	Estimated Construction Cost	Estimated ROW Cost	Estimated Total Cost
Long-Range 2016-2020								
P16	300	Lakewood/Dupont	SR 512/Lakewood	Surface	Urban	\$3,000,000	\$6,450,000	\$9,450,000
P17	250	Valley	SR 162/South Hill/Puyallup	Surface	Urban	\$2,500,000	\$5,375,000	\$7,875,000
P18	300	I-5 Central	South Tacoma Station	Surface	Urban	\$3,000,000	\$6,450,000	\$9,450,000
P22	250	Spanaway/Parkland	SR 512/SR 7	Surface	Urban	\$2,500,000	\$5,375,000	\$7,875,000
Total	1,100			Long-Range Sub-Totals		\$11,000,000	\$23,650,000	\$34,650,000
MTP 2030 Horizon								
P19	200	I-5 Central	SR 16/Narrows Bridge	Structure	Urban	\$4,000,000	\$2,150,000	\$6,150,000
P20	200	Lakewood/Dupont	SR 512/Lakewood	Structure	Urban	\$4,000,000	\$2,150,000	\$6,150,000
P21	100	Valley	SR 161/Graham	Surface	Rural	\$1,000,000	\$700,000	\$1,700,000
Total	500			MTP Horizon Sub-Totals		\$9,000,000	\$5,000,000	\$14,000,000
PIERCE COUNTY TOTALS						\$87,500,000	\$93,150,000	\$259,960,500

NOTES

1. Program plans are organized by county. The lead agency for a project will be determined at the time of implementation.
2. This program plan identifies the general location, time period, and type of park-and-ride facilities needed. Exact size, location, timing, and type of facility to be determined by local agencies and public process at the time of implementation.
3. Forecasts represent unconstrained transit corridor demand.
4. Cost estimates are in year 2000 dollars.
5. All costs are preliminary planning level capital estimates intended to serve as placeholders. They do not include operations or maintenance costs.
6. Funds have been programmed for lots in the short-term category only. No commitment has been made or is implied regarding funding or the ability to fund further projects.
7. Map numbers may not be sequential.

Source: Parsons Brinckerhoff

INSERT FIGURE 7.7 - PIERCE COUNTY PROPOSED PROJECT PROGRAM

METHODOLOGICAL ASSUMPTIONS SPECIFIC TO PIERCE COUNTY

The methodology utilized for the Pierce County analysis closely followed the methodology outlined in Section III of this report. Adjustments in methodology which pertain only to this county are presented below.

Coverage Areas

An initial step in the demand estimation involves the identification of ideal coverage areas for each corridor. Coverage areas for individual park-and-ride facilities within each transit corridor are shown in Figures 7.8 through 7.12. Proxy lots and combined existing lots shown in these figures were located for analysis purposes, and do not suggest finalized recommendations.

Transit Assumptions

The PRD model requires the input of transit assumptions. In order to estimate “unconstrained” park-and-ride demand, reasonably aggressive existing and future transit service levels were assumed. These assumptions included:

- Service to the Lakewood and Dupont proxy lots was assumed to be similar to the SR 512 facility.
- Service to the N 167/Sumner Station and the Puyallup Station proxy lots was assumed to be similar to the Tacoma Dome Station.
- All lots were assumed to have service to either the Tacoma or Seattle CBD.

INSERT FIGURE 7.8 – COVERAGE AREAS FOR THE PENINSULA CORRIDOR

INSERT FIGURE 7.9 – COVERAGE AREAS FOR THE CENTRAL TACOMA SUB-AREA

INSERT FIGURE 7.10 – COVERAGE AREAS FOR THE LAKEWOOD/DUPONT SUB-AREA

INSERT FIGURE 7.11 - COVERAGE AREAS FOR THE PARKLAND/SPANAWAY SUB-AREA

INSERT FIGURE 7.12 – COVERAGE AREAS FOR THE VALLEY CORRIDOR

Local Methodological Adjustments

A uniform methodology was applied throughout the study in order to assure consistency of findings. The three step approach outlined in the Methodology chapter (Section III) of the report allowed for minor modifications to be made for each county.

Because the PRD model was primarily developed in King County, adjustments were required to validate the model for use in Kitsap, Pierce, and Snohomish counties. These adjustments were made on a trial-and-error basis using existing observed demand to obtain reasonable results. The following methodological adjustments were made for the Pierce County analysis:

- The Tacoma CBD was substituted for the University of Washington (Seattle campus) destination in the PRD model.
- The University of Washington campus in Tacoma was treated the same as the Tacoma CBD destination.
- No direct service was provided to the Renton and Everett Boeing or Bellevue CBD destinations.
- An additional \$4.00 cost for a toll bridge across the Tacoma Narrows was added in to the weighted auto operational costs in the PRD model for 2010, and an additional \$6.00 for 2020, for the lots in the Peninsula Corridor. Long-range forecasts could be expected to be slightly lower in the event that a toll bridge is not constructed.
- Four sets of growth rates were estimated for King County. These growth rates were taken from the Sound Transit and PSRC models, and applied to the lots by transit corridor and sub-area as follows:

Growth Rate Area	Growth Rate		Lots
	Transit	Population	
Lakewood/Dupont & Parkland/Spanaway Sub-Areas	1.045	1.013	Roy "Y" SR 512 Lakewood West Dupont Parkland
Central Tacoma Sub-Area	1.016	1.015	Tacoma Dome Station S. Tacoma Station Narrows/TCC/Center Southeast Tacoma
Valley Corridor	1.035	1.014	N167/Sumner Station Bonney Lake Puyallup Station South Hill
Peninsula Corridor	1.035	1.018	Purdy Gig Harbor Key Center